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UNITED STATES DEPARTMENT OF AGRICULTURE

BUREAU OF ENTOMOLOGY

FOREST INSECT INVESTIGATIONS

REPORT

of

WESTERN PINE BEETLE SURVEY

HAPPY CAMP-LAVA BEDS AREA

MODOC NATIONAL FOREST, CALIFORNIA

October 1925.

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By

J. E. Patterson,
Assistant Entomologist,

U.S. Bureau of Entomology.

GOVERNMENT PRINTING OFFICE

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FOREWORD.

The first reports of insect infestations on the Happy Camp-Lava Beds District of the Modoc National Forest, California, were received in 1922 from Forest Service officers and field men of the Bureau of Entomology.

Following these reports the Forest Service directed Mr. A.J. Jaenicke to make a preliminary examination of the area. Mr. Jaenicke made his examination in November 1922, and later in December of the same year, reported the conditions found. These were substantially that an epidemic infestation existed over a large portion of an area of 430,000 acres, and that during the three preceding years this infestation of the western pine beetle had resulted in a loss of 100,000,000 board feet of yellow pine timber.

Because of the valuable timber resources involved on the area it was deemed important by the owners - the Forest Service and a few private companies - to secure information on the trend of this infestation during the succeeding two years. Funds were contributed by the principal owners for a survey in 1923 which was carried out in August under the direction of Mr. F. P. Keen of the Bureau of Entomology.

A third annual survey directed by Mr. Keen was made in November 1924 by the Bureau of Entomology.

A report of each of these three annual surveys was submitted to each party interested. These reports covered in detail the physical features of the area and timber types, the characteristics of the infestation and the annual losses for the years, 1921, 1922, and 1923.

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The information secured during these years has been of considerable importance to the owners of the timber as well as to the Bureau of Entomology. In the latter case the data obtained has been of value in checking the results of control work carried out on projects in southern Oregon and Northern California which are located near this area.

THE 1925 SURVEY

Early in 1924 it was apparent that a high increase in beetle infestation over the yellow pine areas of this entire region was imminent. A fourth survey of the area was therefore important in order to obtain information on the progress of the beetle infestation and the amount of the increase which was impending.

This fourth survey was carried out during the latter part of October 1925 by the Bureau of Entomology without cost to the owners of the timber. It was personally conducted by the writer.

The results of the cruise on the various units of the area are given in the following memorandum.

As all parties primarily interested in the beetle losses on the area already have copies of the previous reports the information in the following is brief and presents only such data as will make clear the progress or trend of this infestation. It is presented as a progress report to supplement the previous reports.

RESULTS OF THE SURVEY.

The separate units are taken up in the order followed in the previous reports. Discussion regarding acreage, timber types, and other characteristics, is omitted. For convenience of comparison the annual beetle loss since 1921 on the check sections is given.

1 - Glass Mt. Unit:

Year of attack.	Estimated loss per check section.	Reduction.	Increase.
1921	90 trees		
1922	79 "	12%	
1923	36 "	54%	
1924	190 "		426%

2 - Timber Mt. Unit:

No figures have previously been given for the losses on this unit prior to 1924. It is estimated that the 1924 loss will average 60 trees per section.

3 - Badger Unit:

Year of attack.	Estimated loss per check section.	Reduction.	Increase.
1921	170 trees		
1922	98 "	42%	
1923	47 "	52%	
1924	72 "		53%

4 - Lava Unit:

This unit is similiar to the Timber Mt. Unit and the infestation has followed the same trend. An estimated beetle loss averaging about 40 trees per section occurred during 1924. This is an increase over previous years.

5 - Happy Camp Unit:

Year of attack.	Estimated loss per check section.	Reduction.	Increase.
1921	92 trees		
1922	69 "	25%	
1923	31 "	55%	
1924	90 "		190%

6 - Pitt River Unit:

Year of attack.	Estimated loss per check section.	Reduction.	Increase.
1921	140 trees		
1922	166 "		18%
1923	74 "	55%	
1924	90 "		22%

7 - White Horse Unit:

Year of attack.	Estimated loss per check section.	Reduction.	Increase.
1921	67 trees		
1922	80 "		19%
1923	58 "	27%	
1924	147 "		157%

8 - Widow Valley Unit:

Year of attack.	Estimated loss per check section.	Reduction.	Increase.
1921	50 trees		
1922	34 "	32%	
1923	30 "	13%	
1924	21 "	30%	

9 - Hot Springs Unit:

Year of attack.	Estimated loss per check section.	Reduction.	Increase.
1921	133 trees		
1922	120 "	10%	
1923	34 "	72%	
1924	24 "	29%	

10 - Muck Valley Unit:

No definite estimate of losses prior to 1924 is available. The 1924 loss on this unit will not average more than 30 trees per section.

TOTAL AREA:

Year of attack.	Estimated loss per check section.	Reduction.	Increase.
1921	109 trees		
1922	91 "	17%	
1923	42 "	54%	
1924	91 "		117%

In the report of last year's (1924) examination Mr. Keen estimated the 1924 losses on the separate units. He used, as a basis for these estimates, the number of trees attacked in 1924 which were marked during the survey. These trees gave a fairly accurate index of the trend of the infestation and indicated a heavy increase.

The 1924 survey showed that the predicted increase had occurred and that the beetles losses had exceeded his estimate. An increase in loss during the year occurred on 7 units out of the 10 on the area. The only units showing a decrease in loss were Hot Springs, Widow Valley, and Muck Valley; all in the extreme southern part of the area. The highest increase (428%) in loss occurred in the Glass Mountain Unit bordering the open, sage brush covered lava beds which bound the area on the north.

The progress of the 1924 infestation on this area conforms closely to the general trend of barkbeetle infestation throughout the yellow pine stands of southern Oregon and northern California during this year. The percent of increase over the 1923 infestation has been about the same over this entire region.

Sufficient data were secured during the survey to make possible a fairly close estimate of the 1925 loss. It is predicted that the beetle losses during the year 1925 will closely approximate those of 1924 which are reported in this memorandum.

The following table give the loss data on this area to the end of 1924.

Respectfully submitted,

J. E. Patterson,
Assistant Entomologist.

Stanford University,
California,
March 2, 1926.

TABLE I.

VOLUME OF TIMBER KILLED BY BEETLES.

Unit.	Annual loss in board feet. 1921	1922	1923	1924
1 - Glass Mt.	9,480,000	8,330,000	3,830,000	20,220,000
2 - Timber Mt.	1,300,000	1,291,500	1,000,000	1,500,000
3 - Badger	11,140,000	6,421,500	3,080,000	4,710,000
4 - Lava	3,000,000	2,610,000	1,800,000	2,400,000
5 - Happy Camp	9,420,000	7,067,500	3,180,000	9,220,000
6 - Pitt River	3,040,000	3,604,500	1,620,000	1,970,000
7 - White Horse	2,650,000	3,162,000	2,300,000	5,910,000
8 - Widow Valley	2,560,000	1,745,000	1,540,000	1,078,000
9 - Hot Springs	2,400,000	2,169,000	610,000	433,000
10 - Muck Valley	1,000,000	980,000	800,000	600,000
Total	45,990,000	37,381,000	19,760,000	48,041,000
Percent of stand	.92%	.75%	.40%	.96%